IN THE CLAIMS

What is claimed is:

1. A method of power factor control for a power regulation system connected for supplying electric power to a reactive load, the method comprising the steps of:

identifying an absolute value of a magnitude on a current and a voltage peak waveforms;

determining a time delay between a designated peak of one half cycle of the voltage waveform and a designated peak of a corresponding half cycle of the current waveform wherein the time delay is representative of the power factor of power supplied to the load;

comparing the magnitude of the AC voltage waveform to a pre-selected magnitude; and

adjusting the voltage applied to the load in a manner to bring the power factor towards unity.

2. The method of claim 1 and including the step of monitoring peak values of the AC current representative waveform and limiting the power factor adjustment to prevent respective current values from falling below a selected minimum value.

3. The method of claim 1 wherein the step of adjusting includes the step of removing voltage from the load for a portion of each half-cycle of the AC voltage waveform.

4. The method of claim 2 further comprising monitoring load states and limiting the power factor adjustment based on the load state.

5. The method of claim 1 wherein the control system includes at least one controllable electronic switch coupled in series circuit between the AC power source and the load, the method of adjusting comprising gating the electronic switch out of conduction for a portion of each half-cycle of the AC voltage waveform.

6. The method of claim 1 wherein the step of determining a time delay comprises estimating the time delay.

7. The method of claim 5 wherein the step of gating includes pulse width modulation of the voltage waveform.